

Title (en)

Process for vapor phase epitaxy of compound semiconductor

Title (de)

Verfahren zum epitaktischen Wachsen einer Halbleiterverbindung in der Dampfphase

Title (fr)

Procédé d'épitation en phase vapeur d'un composé semi-conducteur

Publication

**EP 0801156 B1 20020904 (EN)**

Application

**EP 97302033 A 19970325**

Priority

- JP 6776296 A 19960325
- JP 8757097 A 19970321

Abstract (en)

[origin: EP0801156A2] The present invention provides a process for forming a high quality epitaxial compound semiconductor layer of indium gallium nitride  $\text{In}_x\text{Ga}_{1-x}\text{N}$  (where,  $0 < x < 1$ ) on a substrate (1). A first gas including indium trichloride ( $\text{InCl}_3$ ) and a second gas including ammonia ( $\text{NH}_3$ ) are introduced into a reaction chamber (56) heated at a first temperature and indium nitride ( $\text{InN}$ ) is grown epitaxially on the substrate (1) by nitrogen ( $\text{N}_2$ ) carrier gas to form an  $\text{InN}$  buffer layer. Thereafter, a third gas including hydrogen chloride ( $\text{HCl}$ ) and gallium ( $\text{Ga}$ ) is introduced with the first and second gasses into the chamber (56) heated at a second temperature higher than the first temperature and an epitaxial  $\text{In}_x\text{Ga}_{1-x}\text{N}$  layer is grown on the buffer layer by  $\text{N}_2$  gas. By using helium ( $\text{He}$ ), instead of  $\text{N}_2$ , as carrier gas, the  $\text{In}_x\text{Ga}_{1-x}\text{N}$  layer with more homogeneous quality is obtained. In addition, the  $\text{InN}$  buffer layer is allowed to be modified into a  $\text{GaN}$  buffer layer.

IPC 1-7

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CPC (source: EP KR US)

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